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Conflicting Climate Change Frames in a Global Field of Media Discourse

Jeffrey Broadbent[1], John Sonnett[2], Iosef Botetzagias[3], Marcus Carson[4], Anabela Carvalho[5], Yu-Ju Chien[6], Christopher Edling[7], Dana Fisher[8], Georgios Giouzepas[3], Randolph Haluza-DeLay[9], Koichi Hasegawa[10], Christian Hirschi[11], Ana Horta[12], Kazuhiro Ikeda[13], Jun Jin[14], Dowan Ku[15], Myanna Lahsen[16], Ho-Ching Lee[17], Tze-Luen Alan Lin[6], Thomas Malang[18], Jana Ollmann[18], Diane Payne[19], Sony Pellissery[20], Stephan Price[21], Simone Pulver[22], Jaime Sainz[23], Keiichi Satoh[10], Clare Saunders[24], Luisa Schmidt[12], Mark C. J. Stoddart[25], Pradip Swarnakar[26], Tomoyuki Tatsumi[27], David Tindall[28], Philip Vaughter[29], Paul Wagner[30], Sun-Jin Yun[31], and Sun Zhengyi[32]

Abstract

Reducing global emissions will require a global cosmopolitan culture built from detailed attention to conflicting national climate change frames (interpretations) in media discourse. The authors analyze the global field of media climate change discourse using 17 diverse cases and 131 frames. They find four main conflicting dimensions of difference: validity of climate science, scale of ecological risk, scale of climate politics, and support for mitigation policy. These dimensions yield four clusters of cases producing a fractured global field. Positive values on the dimensions show modest association with emissions reductions. Data-mining media research is needed to determine trends in this global field.

Keywords

climate change, comparative, cosmopolitan, frame conflicts, global warming

The geophysical reality of global climate change creates a global risk society fraught with intensifying disasters (Beck 1999). Given the magnitude and universality of the risk, it would be in all societies' best long-term interests to cooperate in the solution, contributing whatever they can to help one another reduce emissions and protect forest carbon sinks. In environmental sociology, this is an attitude known as cosmopolitanism, a concern for global society as opposed to narrow national interests (Beck 2010b; Tyfield and Urry 2009). Climate risk challenges humanity to achieve unprecedented heights of global consensus and cooperation, of cosmopolitanism, requiring the emergence of a new, more integrated global society and culture. This kind of cultural integration can be defined as "a shared set of cultural understandings that provide the basis for communication and social action" (Hironaka 2014:112). As such, global climate change represents a world-historical opportunity for the emergence of a common global society, with failure to do so likely to bring intensifying calamity for all parties. Climate catastrophe itself may have an emancipatory effect upon this process, enhancing global cosmopolitan cooperation (Beck 2010a). On the other hand, intensifying climate disasters might have the opposite effect, overwhelming national coping capacities and causing the emergence of a short-term "lifeboat ethic" of allowing the weak to drown.

Many obstacles suppress this nascent cosmopolitanism. Most prominently, the realities of global inequalities in both wealth and in immediate vulnerability to climate change disaster tear apart the fragile consensus on the need for global action. These inequalities are in part the legacy of colonialism and neoliberal economic depredation (Roberts and Parks 2007; Shue 2014). The obstacles are also due to

the vast scale and diffuse quality of the risk. A third factor is the difference between domestic and foreign politics. Concern about the social effects of climate change disasters tends to stop at national borders, because the political influence of the victims, if any, also stops there (Beck 2010b). In a global blame game, postcolonial poor nations tend to blame the rich nations for the problem and say they must act first (Billett 2009). But the rich nations tend to say, "if the large poor nations don't act, our reductions will be meaningless." The rich nations, especially the United States, also worry that emissions reductions will further damage the economy, when so many jobs have already moved to China and India (Roberts 2011). In general, nations tend to pay attention to more immediate problems and interests. They remain largely preoccupied with other concerns, unable to summon the needed political will to reduce emissions. Their diverse orientations have balkanized the global field of climate change discourse and enervated global negotiations. This situation of global noncooperation represents the largest dilemma of collective action in world history. The long-term pubic good is obviated by actors following short-term, selfish interests (Dietz, Ostrom, and Stern 2003).

In this light, the United Nations (UN) climate change negotiations should be considered a "workspace" wherein better agreements must be crafted (Hironaka 2014:20, 62). The 1992 UN Framework Convention on Climate Change (UNFCCC) established a series of conferences of the parties (COPs) to the convention. To enhance continuing negotiations, the 2015 COP 21 agreement called for "transparency of action and support" (United Nations Framework Convention on Climate Change 2015a). In other words, the parties to the convention need to know more about the details and nuances of each other's stances on climate change.

One way of enhancing the requested transparency would be to make the particular stances toward climate change of the diverse societies and governments more clearly apparent to all actors on the world stage. The present project takes a practical step in that direction by clarifying differences in framing—giving meaning to—while also analyzing the underlying factors that drive the diverse patterns of world opinion. World society theory sees a growing climate cosmopolitanism, while climate justice theory sees a continuation of global economic inequalities fueling continued dissension. Our investigation of the major factors dividing how societies frame climate change provides insight into the exact parameters of these debates.

Newspaper framing—issue interpretation—is an important window into understanding these national stances (Boykoff 2011). As Beck (2010a) wrote, "The political explosiveness of global risks is largely a function of their (re-)presentation in the mass media. When staged in the media, global risks can become 'cosmopolitan events'" (p. 260). Of course, newspaper articles are not synonymous with policy in the political sphere. The research on comparative newspaper framing of climate change reported in this article covers the two years (2007–2008) just before the watershed 2009 COP meeting (Roberts 2011). This period remains a key historical moment to study in terms of understanding contemporary climate politics. It is a peak period for coverage in many countries, largely driven by the convergence of *An Inconvenient Truth* and the Nobel prize for the Intergovernmental Panel on Climate Change (IPCC) and Al Gore. The 2009 COP 15 in Paris was intended to frame a new world agreement that would for the first time include the developing (or Annex II) counties. Accordingly, it was a particularly heightened moment of public and media interest in the issue.

Different social and cultural tendencies may exacerbate or reinforce global divides and help cement differences in policy debate. The 17 societies in this study represent both large and small greenhouse gas emitters that differ in their ways of framing climate change and in their responses. The societies, in rough geographic clustering, are the United States, Canada, Mexico, Brazil, Japan, South Korea, Taiwan, China, New

[1]University of Minnesota, Minneapolis, MN, USA; [2]University of Mississippi, Oxford, MS, USA; [3]University of the Aegean, Lesbos, Greece; [4]Stockholm Environmental Institute, Stockholm, Sweden; [5]University of Minho, Minho, Portugal; [6]National Taiwan University, Taiwan; [7]Lund University, Lund, Sweden; [8]University of Maryland, College Park, MD, USA; [9]The King's University, Edmonton, AB, Canada; [10]Tohoku University, Sendai, Japan; [11]University of Zurich, Zurich, Switzerland; [12]University of Lisbon, Lisbon, Portugal; [13]Japan Women's University, Tokyo, Japan; [14]Tsinghua University, Beijing, China; [15]Environment and Society Research Institute, Seoul, Korea; [16]Earth System Science Center, Brazilian Institute for Space Research, São José dos Campos, Brazil; [17]National Central University, Taiwan; [18]University of Konstanz, Konstanz, Germany; [19]University College, Dublin, Ireland; [20]National Law School, Bangalore, India; [21]University of Southampton, United Kingdom; [22]University of California, Santa Barbara, Santa Barbara, CA, USA; [23]Centro de Investigación y Docencia Económicas (Center for Research and Teaching in Economics), Mexico City, Mexico; [24]University of Exeter, Exeter, UK; [25]Memorial University, St. John's, NL, Canada; [26]ABV - Indian Institute of Information Technology and Management, Gwalior, India; [27]Hitotsubashi University, Tokyo, Japan; [28]University of British Columbia, Vancouver, BC, Canada; [29]United Nations University, Tokyo, Japan; [30]Picker Institute, Oxford, UK; [31]Seoul National University, Seoul, Korea; [32]Shenzhen, China

Authorship Note: Authors after Jeffrey Broadbent and John Sonnett are listed in alphabetical order. Authors' country teams were as follows: **Brazil team:** Myanna Lahsen; **Canada team:** David Tindall, Mark C. J. Stoddart, Randolph Haluza-DeLay; **China team:** Jun Jin, Yu-Ju Chien, Sun Zhengyi; **Germany team:** Jana Ollmann, Thomas Malang; **Greece team:** Iosef Botetzagias, Georgios Giouzepas; **India team:** Pradip Swarnakar, Sony Pellissery; **Ireland team:** Diane Payne, Paul Wagner; **Japan team:** Koichi Hasegawa, Keiichi Satoh, Kazuhiro Ikeda, Tomoyuki Tatsumi; **Korea team:** Dowan Ku, Sun-Jin Yun; **Mexico team:** Simone Pulver, Jaime Sainz; **New Zealand team:** Philip Vaughter; **Portugal team:** Luisa Schmidt, Ana Horta, Anabela Carvalho; **Sweden team:** Christopher Edling, Marcus Carson; **Switzerland team:** Christian Hirschi; **Taiwan team:** Tze-Luen Alan Lin, Ho-Ching Lee; **United Kingdom team:** Clare Saunders, Stephan Price; **United States team:** Philip Vaughter, Jeffrey Broadbent, Dana Fisher.

Corresponding Author:
Jeffrey Broadbent, University of Minnesota, Department of Sociology, 909 Social Science Building, 267 19th Avenue S., Minneapolis, MN 55455, USA.
Email: broad001@umn.edu

Zealand, India, Sweden, the United Kingdom, Ireland, Germany, Greece, Switzerland, and Portugal. Lacking Africa, the Middle East, Southeast Asia, and the transitioning countries, of course, the article and research project cannot claim to represent the full breadth of global framing. But it still incudes most of the large-emitter countries as well as others that present interesting and important variations in response.

We draw on field theory to examine relations between these cases on the basis of the framing of climate change in their national newspapers. Field theory emphasizes the interactions between cases within arenas of "self-organized contestation" (Martin 2003). We assume that the framing of climate change in one case is not wholly independent of its framing in other cases. Our results show that four major contentious issues divide climate change discourse: (1) acceptance versus rejection of consensus climate change science, (2) scale of ecological concern from global to domestic, (3) scale of political concern from global to domestic, and (4) degree of support for government emissions reductions policies. These findings reveal a very complex distribution of interpretations of climate change, as revealed by newspaper frames.

Consideration of these cases' media framings in light of their emissions performance yields insight into how cultural politics play out in news media and how such mediation can affect performance on mitigation. Going beyond describing the distribution of frames, we test, and find modest support for, the hypothesis that compared with the 1990 baseline, countries are more likely to reduce emissions when their newspaper frames accept IPCC-type science, orient to the global level of climate politics and ecological risks, and support mitigation policies. We label these positive frames. Of course, we do not claim that all the formative factors are revealed in newspaper framing. The politics of climate change is a very complex multilevel and "wicked" problem involving a range of factors (Lazarus 2008; Levin et al. 2012). However, we do claim that the results of the present analysis offer some valid and useful insights into this complex process.

Literature Review

A Turning Point in the Global Climate Change Regime

The global climate regime has gradually developed over past decades. It began with the 1988 IPCC and the 1992 UNFCCC. These international institutions respectively promulgated scientific knowledge about and supportive norms for mitigating climate change (Hironaka 2014). Subsequent COPs to the UNFCCC sought to implement its normative injunctions. The 1997 Kyoto Protocol (COP 3) assigned emissions reductions targets to many industrialized countries (attainment period 2008–2012). The protocol achieved some positive effect (Iwata and Okada 2014). But it was hampered by differing levels of performance, dropout of key countries, and lack of inclusion of developing countries.

The 2009 Copenhagen COP 15 first tried to include developing countries under a common regime. This meeting proved to be a major change point in the global negotiation system. Scientists and negotiators realized that the previous Kyoto Protocol, which included only the industrialized countries, was not sufficient to reduce global emissions. China had grown rapidly and become the world's largest emitter of carbon dioxide. India and other Asian countries were growing rapidly as well. However, up to this point, recognizing their developing status, the international climate regime had not put these developing countries under any formal obligation to reduce their emissions. COP 15 was intended to rectify this problem and begin the creation of a new form of Kyoto Protocol that would place formal emissions reductions targets on the developing countries as well.

At the 2009 meeting, divisions between developed and developing countries came to a head, each side pointing the finger of blame for climate change at the other. The meeting broke down in acrimony, producing only a weak agreement among the leaders of the BASIC countries (Brazil, South Africa, India and China) and the United States to take positive action (Diringer 2011). Accordingly, the 2009 COP was a watershed moment when the Kyoto Protocol systems of central assignment of emissions reduction targets broke down and proved unworkable as a truly globally encompassing system (Bodansky 2011; Ciplet, Roberts and Khan 2015).

Faced with these deep fissures, the 2015 COP 21 turned away from centrally determined target allocations. It concluded an agreement among 194 countries to implement voluntary, self-determined amounts and forms of emission reduction, called intended nationally determined contributions (INDCs). The COP process leadership hoped that this voluntary approach would work better than centrally assigned emissions reductions targets. At present, though, even the INDC pledges (187 submitted as of December 2015) are hardly sufficient. Even if fully implemented, they will still result in a planetary warming of 3.5°C to 4.5°C, a level unacceptable by all scientific predictions of likely levels of disaster.

It is therefore important to understand the factors behind the disagreements made apparent by the 2009 COP 15 meetings. The 2007–2008 period was very formative, a time when many countries were deciding their basic stances vis-à-vis an emerging global regime. This is, in other words, an excellent period for studying the basic differences in how countries frame climate change. Of course, national framing is a moving target and all countries' stances have continued to evolve through time. But the strength of the divisions among countries that became apparent during this period led to fundamental changes in the envisioned possibilities of global climate change agreements.

Framing Global Climate Change

For a society to become earnestly engaged in the needed global effort, some social orientations or frames are more

conducive than others. Frames give meaning to and indicate how to interpret events and objects within discourse (Boykoff 2011). They can range from adjectives describing the object itself to the context of discussion about the object. For instance, climate change itself can be framed as "real" or "illusionary," or climate change can be discussed in a host of different contexts: economic effects, alternative energy technology, the political process, policy specifics, allocation of responsibility and so forth. Although the norm of newspaper reporting is detached objectivity (except in opinion columns), in fact editors and reporters cannot but frame an object, whether purposely or not. This conveys a meaning about the object to the readers. In this way, frames can influence beliefs, preferences, and risk perceptions, and through these, actions (Benford and Snow 2000; Nisbet 2009; Snow and Benford 1992:137). For instance, some frames "construct" climate change as a problem that must be addressed and solved, while others obscure and reject that need and urgency (Carvalho 2007; Eder 1996; Hannigan 1995). Hironaka (2014:136) contended that "the growth of the cultural meaningfulness and salience of climate change" has strengthened the global climate change regime. The four lines of framing divisions noted above each represent important "meanings" that can affect the domestic policy formation process around climate change, as explained below.

As a social problem, climate change is, first of all, extreme in its reliance on scientific findings and theory. The capacity to frame climate change as a problem depends on the degree of belief in the majority science (e.g., as promulgated by the IPCC reports). The vast majority of experts on the topic have concluded that the recent, rapid climate change is manmade (Oreskes 2004). Yet in some societies, antiscientific cultures (Jasanoff 2005) as well as governments and companies that deal in fossil fuels (Klein 2014) have conducted rejection campaigns, causing stalemate at this first step (Tranter and Booth 2015). If a society tends to reject the scientific findings about climate change, it will undercut the very rationale for doing anything about climate change. Therefore, one essential orientation for a society to take action to reduce its emissions is to accept the main scientific findings that show that (recent, rapid) climate change is caused by human activity. Of course, a society could reduce its carbon dioxide emissions for reasons other than concern about climate change, for instance, because of economic recession or to reduce reliance on foreign oil imports. In assessing the emissions trajectories of national cases, such factors must also be considered. But for countries to generate sufficient political will to radically reduce emissions in the amount needed to avert ever worsening climate threats, they will have to base their individual and collective global actions on a solid acceptance of IPCC science.

Once accepted, this scientific frame implies the risk frame—that if left unchecked, climate change will bring disaster to human and other life forms on the planet. Beck's (1992, 2010a) risk society thesis argues that we have entered a new stage of social evolution in which human-invented technologies have come to pose the gravest risks to our well-being and existence. The radioactive cloud that wafted over Germany from the 1986 Chernobyl nuclear meltdown initially inspired his work. But climate change poses an even graver technological risk to humanity—from the burning of fossil fuels. The complications of the global weather system make exact prediction impossible, but general trends toward worsening impact are well supported (Intergovernmental Panel on Climate Change 2014). Yet the degrees of uncertainty have given room for skeptics to deny the predicted risks from climate change; some even contend that increased carbon dioxide in the atmosphere will have an overall and long-term beneficial effect upon agricultural productivity (McCright and Dunlap 2000). One could speak of the different risk cultures present across societies that would also affect the intensity of discounting the future and what risks it might hold (Douglas and Wildavsky 1982).

Recognition of risk implies a moral duty to respond. An important frame in the set is acceptance of a moral or normative duty to reduce or end carbon emissions domestically and globally. An orientation to the global UN politics and agreements, which urge rapid action to reduce emissions, should make a country more open to enacting government policies to mitigate climate change. Hironaka (2014) argued that "adoption occurs first among those most central to the global 'conversation' and spreads outwards to those less engaged in global institutions and discourses." She further stated that "Western nation-states tend to be centrally involved in global discourses" (p. 122). This morality could be extended to the environment itself. Countries that show greater concern for the effects of climate change on the global environment, as opposed to at most a narrow concern for the domestic environment, should have stronger political will to carry out mitigation measures. This is so because a collective morality is required to overcome the divisive effects of the dilemmas of collective action and public goods (Dietz et al. 2003).

A final frame concerns the means to attain the ends. It involves the acceptance of practical countermeasures, a frame potentially independent of the preceding ones. Mitigation measures can be implemented through government policies or arise voluntarily from social actors. A host of measures are possible, ranging from carbon tax and emissions trading schemes through subsidies for research and consumer change to grassroots initiatives to reduce, reuse, and recycle. One of the principle factors is the degree of support offered by the dominant political culture concerning government intervention in the economy. Many analysts think that government policies such as carbon tax are required to effectively reduce emissions (Giddens 2009). Although successful in Sweden and other European economies (Giddens 2009), laissez-faire economies, especially the United States, have vehemently opposed such state action (Perrow and Pulver 2015). A host of policy and voluntary measures for emissions reductions and support for

alternative energy are available as mitigation measures. In this article, we combine them into a single measure of orientation toward government mitigation policies. This frame also concerns our technological capacity to replace fossil fuels with noncarbon sources of energy. Great debates have erupted over possible economic disruption from this energy transition, but many experts agree that a combination of conservation and green energy could eventually power most of human needs around the world (Pacala and Socolow 2004) without great economic disruption (Stern 2007).

Explaining Global Frame Patterns

Realist international relations (IR) and world society theories predict different global distributions of frames about climate change. The assumptions of traditional realist theory in IR run contrary to institutionalist, as well as newer social constructionist and world society theories. Realist IR theory gives prominence to national economic and political interests that see the rest of the world in instrumental terms. This would predict that, facing climate change, nations would frame their response in terms of their immediate self-interest (Bodansky 2009; Ciplet et al. 2015). Worry about the negative consequences of emissions reductions on the economy and on national security would dominate the press. Realist IR theory does not recognize the importance of the global environment as a factor in shaping the national interest (Vogeler and Imber 2005:6).

More recently, though, national agencies have come to recognize that the weather disasters, mass migration and potential resource wars arising from climate change pose threats to national security in themselves (Dyer 2005). This scenario of national security risk under global climate change can transform the calculus of self-interest. Because climate change poses a threat to one's own security and economic interests, enlightened self-interest can recognize the necessity of global cooperation as the only solution to the problem (Townsend and Harris 2004). In the long run, moreover, the ultimate logic of climate change demands the recognition of complex interdependence (Vogeler and Imber 2013:6). This renders pointless the attempt to define security solely in national terms. In this way, then, even realist self-interest might prompt nations to work toward the mitigation of global climate change. If nations were operating under such assumptions, their newspapers would stress the global climate change negotiations where bargains and burdens must be hammered out.

Institutionalist theory has many varieties. The strongest variety posits that actors tend to follow rules and regulations decided by authorities and backed by sanctions (Amenta 2005; Brinton and Nee 1998). If the UN Kyoto institutions were strong, we would expect newspapers to frame climate change as a matter of compliance. However, to IR scholars working on global climate change, the problem is that the institutions of the international climate change regime are weak and ineffective (Okereke, Bulkeley, and Schroeder 2009; Young 2002). Therefore, we would not expect a compliance frame to be very prevalent. At most, it would appear among those nations that had accepted emissions reductions targets under the Kyoto Protocol and were worried about their attainment.

Neoinstitutional theory adds the force of "mimetic isomorphism" (DiMaggio and Powell 1983). In this scenario, under conditions of uncertainty where they are not sure what to do, actors copy what other actors are doing. As long as we keep adding carbon dioxide to the atmosphere, the intensification of climate change has high scientific certainty (Intergovernmental Panel on Climate Change 2013). But the exact timing, location, and type of disasters remain highly uncertain. This latter uncertainty, though, by distancing effect from cause, seems to reinforce denial of the problem rather than concern. When the costs of action are high, uncertainty can support inertia. This theory, then, would predict newspaper framing against the reduction of emissions.

Social constructivism (another version of neoinstitutional theory) sees national interest as affected by moral and normative pressures coming from other actors (Keck and Sikkink 1998). More specifically, world society theory posits that the new norms of scientific agreement, cooperation, mitigation and ecologism urged by the UNFCCC and other agreements will shape national interests (Frank, Hironaka, and Schofer 2000; Hironaka 2014). If so, national newspaper frames should reflect a strong concern for both global negotiations and for the global ecology (as a common good). UN membership does increase newspaper attention to climate change and to scientific reports from the IPCC (Broadbent et al. 2013). But under the cooperative ethic, newspapers in developing societies could readily point the finger of blame and responsibility at societies with long polluting records like the United States. Such norm diffusion approaches must also consider the reverse possibility—the global diffusion of reactionary frames denying the existence of anthropogenic climate change.

Along with global factors such as sketched above, a wide range of domestic factors may shape the framing profile of a case (Alasuutari and Qadir 2013, Alasuutari, Qadir, and Creutz 2013). For instance, a high level of vulnerability to climate effects could push the newspapers to focus on local disasters. Other potential domestic factors include the cultural evaluation of science as an arbiter of truth (Jasanoff 2005), the moral culture, the configuration of domestic interests in the fossil fuel economy, state capacity to shape energy sourcing, the inertia of domestic institutions, the cost and feasibility of alternative energy sources, and many others. A range of such causal factors has been posited as hypotheses (Broadbent 2010). Given the complexity of causality, the pressure of mounting climate change disasters could still push the global field in any number of directions—either toward enhanced cooperation or toward balkanization and a life-boat ethic—with huge consequences for the outcomes of global negotiations. In the time period

analyzed in this article (2007–2008) and into the present, societies exhibit different mixtures and configurations of the frames discussed above. Transparency about the configuration of frames they do hold will be critical to building trust in the continuing negotiations.

Data and Methods

Newspapers provide an accessible medium through which to assess national tendencies in issue framing (Gamson 1992; Hallin and Mancini 2004). Newspaper frames provide a general indicator of nationally prevalent cultural evaluations about an issue, albeit especially those of elites (Boykoff 2011; Carvalho 2007). Media is a site for struggle over the definition of social reality (Gamson et al. 1992; Gurevitch and Levy 1985).

As such, frames can shed light on the types of actions that a society and political system is likely to take in a given issue area (Nisbet 2009). Given the range of factors influencing the actual policies of the state and the outcomes, though, the connection between newspaper frames and policy outcomes must be interpreted in context. Other factors could also affect a nation's mitigation response without appearing in the newspapers. We return to this issue in the conclusion.

With teams collecting data in 16 countries plus Taiwan, the project on Comparing Climate Change Policy Networks (Compon) analyzed these 17 *cases* (Ragin and Becker 1992) of societal climate change framing in newspapers. Research teams used common data-collection instruments and procedures to gather and code comparable information. Among the most widely read newspapers, teams selected, when possible, three with different ideological orientations: conservative, liberal, and economic (as defined in the respective societies). The teams searched the computerized archives of these newspapers for articles in 2007 and 2008 that mention the keywords: climate change or global warming (in their respective languages).

The first step consisted of finding the news share of climate change articles. The teams counted the numbers of articles mentioning the keyword climate change or global warming per year from 1997 to 2010 and divided that number by the total number of articles. Here, the results parallel that found by other work (Boykoff 2011).

Next, the teams focused on the key period of 2007 and 2008, preceding the 2009 COP 15 conference. They extracted a database of all articles that mentioned the keyword climate change or global warming and eliminated articles that mentioned the keywords only as a minor subject. Some case teams coded all of these keyword articles, while others took a random sample of them for coding. The teams coded a total of 18,721 articles about climate change for the 2007–2008 period.

The coding proceeded in two steps. These steps differed by case and by when the case entered the coding process. Those teams starting early coded all or a random sample of these articles focusing on identifying information (date, page, newspaper name), main issues (inductively summarized by the coders), issue frames (succinct terms for the main issues defined by coders), scale (domestic or international news), and source (domestic or foreign news source).

The project coordinator subsequently went through the inductively coded issue frames. Through induction, he extracted a common set of meta-frames that could cover all the diverse inductive frames from all the available cases. Over the course of three years (2012–2015), this matching procedure produced a set of 131 meta-frames that could be used in common by all the cases.

The teams that had already inductively coded their articles then recoded a subsample of those articles using this new, common set of meta-frames, assigning a single main meta-frame for each article. The teams that joined at this later stage started their coding using the 131-meta-frame set on a reduced random sample of their total number of keyword articles. For all the cases, the purpose was to arrive at a representative sample of keyword articles coded using the 131-meta-frame set.

Because the teams were working independently, following a common protocol but loosely coordinated within the limits of international possibility, they ended up coding different numbers and percentages of articles (randomly selected if a subsample) out of their sample of keyword articles (Brazil, 522 of 2,996; Canada, 452 of 603; China, 447 of 480; Germany, 190 of 191; Greece, 224 of 1,133; India, 471 of 1,206; Ireland, 517 of 517; Japan, 243 of 2,425; Korea, 184 of 925; Mexico, 473 of 1,810; New Zealand, 1701 of 1,701; Portugal, 247 of 1,344; Sweden, 199 of 1,502; Switzerland, 549 of 549; Taiwan, 422 of 840; United Kingdom, 371 of 375; United States, 731 of 1,221).

For the analytical purposes of this article, the set of 131 meta-frames has been reduced to 33 synthesized frames in 10 categories (see Appendix Table A1). To enable comparison among the cases despite the differences in the number of articles coded in each, the statistical significance of the numbers was tested using a cumulative binomial distribution test and the results were coded to produce the matrix for netfield analysis (Sonnett 2016). Two benchmarks were used to assess whether framing categories represent at least 1 percent (up to 4.9 percent) or 5 percent (or more) of articles for each of the 17 cases. These two benchmarks captured variation better than other combinations that were tested, and correspond to half a standard deviation below or above the average cell percentage of 3.03 percent.

A matrix of ties between frames and cases was then analyzed using social network analysis and correspondence analysis. Cells in the matrix for social network analysis were coded 2 for 5 percent, 1 for 1 percent, and 0 for nonsignificant (<1 percent), representing the presence or absence and strength of ties. Cells for correspondence analysis were coded 3 for 5 percent, 2 for 1 percent, and 1 for nonsignificant, representing strength of association within the field of

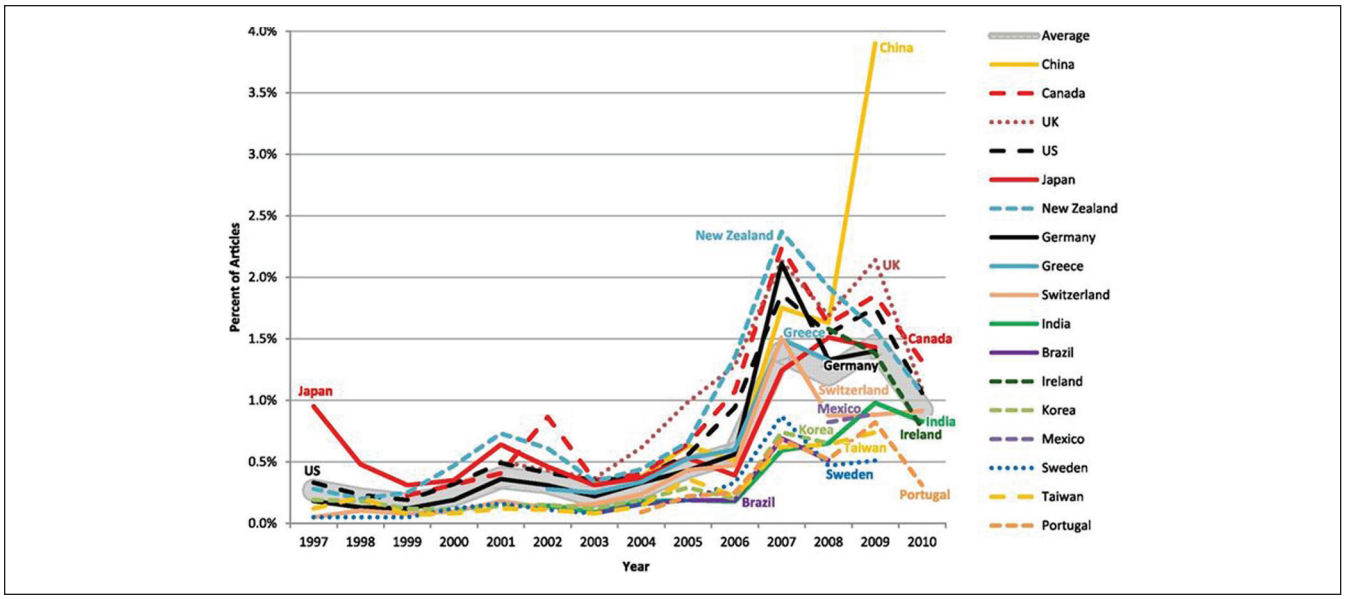

Figure 1. Articles mentioning climate change (percentage of total articles, 17 societies).
Note: Percentage articles for Canada and Greece are derived from two newspapers and for New Zealand from two papers until 2003.

media discourse. This combination of methods shows both the pattern of ties between cases and frames and the oppositions that create divisions in the field.

After mapping the dimensions of difference within this field, we draw on qualitative comparative analysis (QCA) (Ragin 2008) to examine how configurations of major frames relate to mitigation outcomes. The QCA approach, based on the logic of case studies, assumes that causal variables are best analyzed as combinations or configurations of conditions, instead of as independent variables. We therefore examine how major dimensions of difference in the framing of climate change are combined in each case, and how these combinations relate to our outcome variable, success in attaining emissions reduction goals.

Findings

Global Field of Climate Change Discourse

Data on the comparative news share of climate change and global warming articles show a rising international trend of coverage (Figure 1). The broad gray line traces the global average in each year. The collective peaks respond to important events in the international climate change regime: the 1997 Kyoto COP that produced the Kyoto Protocol, the 2001 Third Assessment Report by the IPCC, the 2007 IPCC Fourth Assessment Report, and the 2009 COP 15 in Copenhagen, when China first took a leading role in the international negotiations.

The rising trend of coverage, with peaks responding to important global events about climate change, indicate the gradual strengthening of a global climate change culture. The national bumps in 2003 coincide with the Third Assessment Report of the IPCC. The very striking multiple peaks in 2007 coincide with the IPCC Fourth Assessment Report, as well as the Stern report and the film *An Inconvenient Truth*. Then global coverage reached a higher peak for the 2009 COP 15. During this time, developing countries realized that they would have to be included in the next formation of the global regime. So they began to mobilize and debate the issues internally, and newspapers started covering climate change issues more intensively.

Exploring some of the seeming anomalies in these data produced surprising answers. Why did Sweden, a leader in mitigation, have so little coverage of climate change compared with many other cases much less advanced in mitigation? The Sweden team leaders explained that the issue of climate change is so taken from granted in Sweden that it is not very newsworthy. At the other extreme, why did China, long relatively low in climate change coverage, suddenly leap to the top in 2009? The leader of the China team explained that during the 2009 Copenhagen meeting, China fully joined the international negotiations for the first time. Its participation was big news at home and around the world. China was especially concerned in its news coverage and at the negotiations that the world would appreciate its already considerable investments in alternative sources of energy. If the cases had not been highlighted by the comparative trend lines, these individual qualities would not have been so apparent.

Figure 2 maps the framing of climate change news in a global media discourse field as described by the 17 cases. Thick lines indicate relatively strong ties to frames (≥5 percent) and thin lines weaker ties (from 1 percent to 4.9 percent). The first and second correspondence factors define the horizontal and vertical axes of the layout. The combination

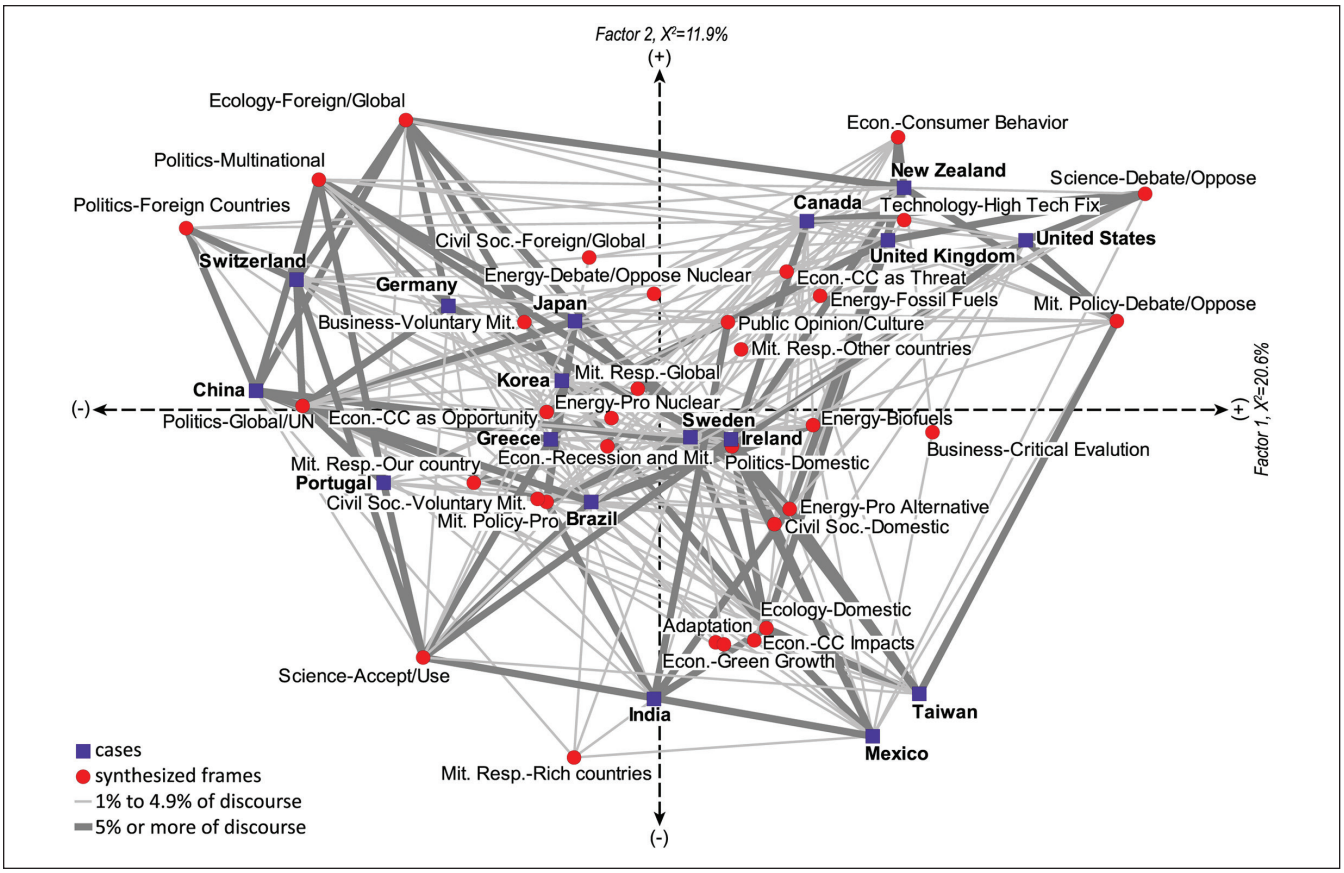

Figure 2. Global field of media discourse about climate change.
Note: CC = climate change; Econ. = economy; Mit. = mitigation; Resp. = responsibility; Soc. = society; UN = United Nations.

of these two factors maps important contrasts between opposed frames and their supporting societies. We interpret these contrasts along two diagonals that form an implicit X on the diagram.

The diagonal from upper left to lower right juxtaposes a focus on global climate change ecological impacts (Ecology-Foreign/Global) in the upper left quadrant versus a focus on domestic climate change ecological impacts (Ecology-Domestic) in the lower right. This diagonal also juxtaposes a focus on global/multinational climate change politics versus a focus on domestic climate change politics. In other words, this diagonal reveals two major sources of division in the global field that go together or vary in tandem, one concerned with the scope of ecological concern and one concerned with the scope of political concern.

The second diagonal, running from the lower left to the upper right, contrasts the acceptance of consensus climate science (Science-Accept/Use) in the lower left versus debates about and opposition to the science (Science-Debate/Oppose) in the upper right. The same diagonal contrasts support for mitigation policy (Mit. Policy-Pro) in the lower left versus debate of/opposition to mitigation policy (Mit. Policy-Debate/Oppose) in the upper right respectively. Once again, this second diagonal reveals two major sources of division in the global field that vary together—the framing of science and the support for mitigation policy.

A number of secondary oppositions are also apparent, and drawing on Bourdieu's (1993) field theory, we might interpret the horizontal axis as split between two poles. On the right, we see the dominance of economic capital, with frames for consumer behavior and climate change as economic threat on the upper right and economic impacts and green economic growth on the bottom right. On the left we see frames associated with cultural capital, seen especially in the acceptance and use of climate science on the lower left but also in the legitimacy given to international political institutions on the upper left. The vertical axis can be interpreted as the overall volume of capital, with cases at the top representing a "field of power" defined by high amounts of either economic or cultural capital, and the cases at the bottom having lower amounts of these types of capital. These dimensions of the global field are worthy of further research, but in the following sections, we focus on the four dimensions of media framing explicated above.

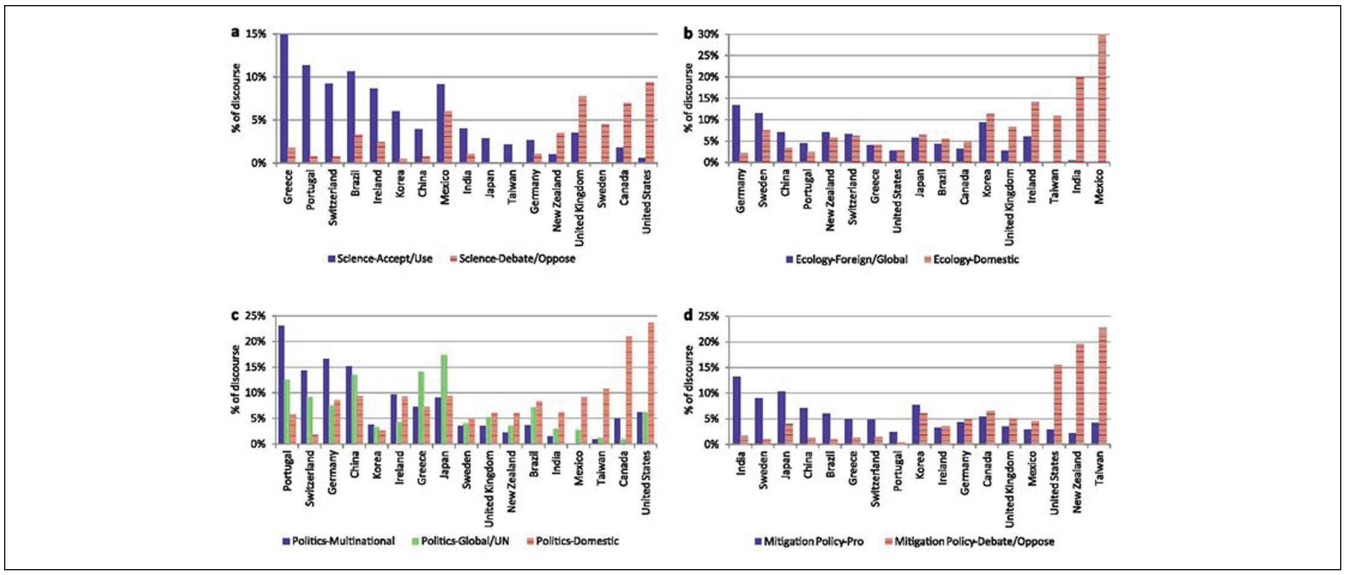

Figure 3. Opposed frames in the global field of media discourse: relative acceptance or debating/opposition to consensus climate change science (a); global/foreign versus domestic scale of climate ecological impacts (b); orientation to multinational, global, or domestic climate change politics (c); and relative support for versus debate/opposition to governmental mitigation policies for the reduction of carbon emissions (d).
Note: UN = United Nations.

Four Contrasts in Climate Change Framing

Figure 3 provides more detail on contrasts between cases in the framing of the four contentious issues revealed above: science, ecology, politics, and mitigation policy. In each panel of Figure 3, the cases are arranged to highlight the major differences along the variable (as indicated by bar height). The vertical axis represents the percentage of all climate change newspaper articles that use this climate change frame.

As discussed above, acceptance of the consensus climate change science is a sine qua non of purposeful mitigation action. Figure 3a makes clear that a majority of societies strongly accept consensus science, especially in Europe and Asia. Debate and opposition comes from a culturally defined cluster of Anglo societies—first and foremost the United States, but also Canada, the United Kingdom, and New Zealand (Dunlap and McCright 2015; Painter 2013; Stern 2016). U.S. discourse is highly influenced by conservative think tanks financed by the fossil fuel industry to produce doubt about climate science, and this influence has spread to other English-speaking societies (Dunlap and McCright 2010; Dunlap and Jacques 2013; Farrell 2016). This clustering may also indicate a common cultural preference for laissez-faire market systems and rejection of state policy interventions (Dobbin 1994).

Breaking apart the debating/rejecting science frame into its two components—debate versus reject—shows that science *debate* dominated the New Zealand press, while science *rejection* dominated the other three Anglo countries. In 2008, New Zealand passed the world's first combined industrial and agricultural cap-and-trade policy and was continuing to debate its necessity and effects. The United Kingdom passed a "world-leading" climate and emissions reductions bill despite controversy (Giddens 2009). In Canada, one major paper largely accepted the consensus science position, while another provided more space for climate skepticism (Stoddart, Haluza-DeLay, and Tindall 2016). These contradictory tendencies soften the rejection of science evident in the Anglo cluster, making the United States exceptional in its degree of rejection.

Within this rejection-tending Anglo cluster, we find an intriguing anomaly—Sweden, the country that founded climate change science. According to the Swedish team, normally, the Swedish press presents no objections to the mainstream climate science. The paucity of science related articles indicate the taken-for-granted quality of the science. Indeed, in 1896 a Swedish chemist, Svante Arrhenius, discovered the chemical basis of carbon dioxide accumulation in the atmosphere from human activities and predicted the greenhouse effect. And in 1988, a Swedish climatologist, Bert Bolin, founded the IPCC (Bolin 2007). But during the period of our focus, some letters to the editor and opinion articles had expressed the rejectionist position (Anshelm and Hultman 2014).

Once accepting the scientific consensus, it becomes more imperative to assess the ecological risk from climate change. Societies differ in the locus and magnitude of their ecological concern (Figure 3b). Locus varies from Foreign/Global Ecology to Domestic Ecology. On the left end,

Germany, Sweden and China show strong concern about global ecology. On the right, Mexico and India are highly concerned about domestic risks. Taiwan, Ireland, the United Kingdom, and South Korea also show high levels of concern with domestic ecological risk. Frequent focus on global ecology suggests that such societies tend toward a universal ethic that encourages protection of the global commons rather than a narrow domestic focus (Dietz et al. 2002). At the same time, the high risk and vulnerability of developing countries (Yohe et al. 2006) helps explain their domestic focus.

Important also is the magnitude of ecological focus. Magnitude rises at both ends of the scale, and dips in the center. The United States exhibits the lowest levels of ecological focus, consonant with the prevalence of climate and science skepticism and low levels of perception of risk from climate change (Leiserowitz et al. 2015). At the right pole, Mexico and India devote 20 percent to 30 percent of their climate change news coverage to concern about domestic ecological effects. These concerns are quite understandable. India and Mexico, two large developing societies near the equator, will be hit hard by the effects of climate change. They have populations living at minimal subsistence levels in the agricultural sector. These populations are highly sensitive to changes in weather patterns. If faced with severe deprivation, they could generate massive political demands and climate migrations. Brazil is in a similar situation, but lacks heightened ecological concern.

China is also vulnerable to climate impacts, but its party-controlled press avoids mention of domestic problems so as not to stir up protest. Instead, the press focuses on China's place in the world. In all four developing societies, the press conveys the frame of being victimized; they hold the rich countries responsible for emissions mitigation (see the bottom of Figure 2). Accordingly, Mexico and India feel little responsibility to take notice of ecological effects beyond their borders. But the Chinese press follows the Party line, which at this time, in preparation for China's inclusion in the 2009 Copenhagen COP 15 agreement, stressed the international dimensions of ecological problems.

Germany and Sweden contrast greatly with the developing societies. These two wealthy, industrialized societies have played key roles in the growth of the global climate regime. In both countries, a strong public sense of global concern and responsibility plus conducive political institutions drove their exemplary environmental performance. As mentioned above, Sweden produced both the foundations of climate change science and the institutions for its global diffusion (Bolin 2007). Sweden has also tapped its large hydropower potentials, which have helped in its rapid reduction of carbon emissions.

Germany, on the other hand, has traditionally relied heavily on coal for its energy. And unlike France, Germany's active environmental movement and Green Party have halted the nuclear power agenda. Germany has accomplished an unprecedented and ongoing energy transition (*Energiewende*), already reaching 30 percent of total electricity production from renewable sources and aiming for 60 percent by 2050. This has been based on strong public support (94 percent) and engagement (German Renewable Energies Agency 2015; Giddens 2009).

After attitude toward science and degree of ecological concern, attention to climate politics defines a third dimension of societal response. Both the scale and the magnitude of coverage of climate change politics varies greatly. In the case of climate change, the major source of norms of action come from global sources such as the UN. But Figure 3c indicates that a predominant orientation to UN climate change politics is only found in Japan and Greece. China and Portugal also devote a large share of their news coverage to global and UN politics.

Other countries do devote a large share of their news to the politics of climate change, but on either a domestic or multinational scale. For member countries of the European Union (EU), attention to multinational news indicates attention to EU politics, which mandates much of their climate policy. Under the EU bubble for the Kyoto Protocol, the whole EU (15 members in 1997) agreed to reduce total emissions by 8 percent from 1990 levels (United Nations Framework Convention on Climate Change 2015b). Within the EU, a North-South divide resulted in Germany's large economy assuming responsibility for extensive reductions, while Portugal, Greece, and Ireland increased emissions from their small economies.

If we compare domestic versus all non-EU multinational and global framing, China plus three EU countries—Portugal, Switzerland, and Germany—reveal very strong outward-looking political orientations. At the other extreme, the United States, Canada, and Mexico are the most inward looking, forming a North American bloc where national politics and interests are privileged over international (or cosmopolitan) ways of framing the issue. India also focuses more on domestic climate change politics, although its total political focus is relatively low. Taiwan's concern with domestic effects is a special case because, as a society and not a nation, it is not a member of the UN. Research has shown that Taiwan's newspapers respond relatively weakly to UN events and the global norms they propagate (Broadbent et al. 2013).

Finally, the most practical of the four framing orientations is to make policies to reduce emissions. There are many ways to take action, some stressing voluntary public and business activity such as conservation. However, the most effective programs require proactive government policies to impose common rules and sanctions. Such government policies include regulated standards, carbon taxes, cap and trade, subsidies for alternative energy, reductions

targets and transportation regulations. Our data summarize the frames for all the distinct types of government mitigation policies.

Cases cluster into three clear groups: pro, balanced, and debate/oppose proactive government mitigation policy (see Figure 3d). In decreasing order of magnitude, India, Sweden, Japan, China, Brazil, Greece, Switzerland, and Portugal belong to the pro group. Korea, Ireland, Germany, Canada, the United Kingdom, and Mexico display a relative balance between pro and con. The United States, New Zealand, and Taiwan display high levels of opposition to government mitigation policies. This pattern in the framing of mitigation policy partially overlaps with patterns in the previous three stages of societal response, but also shows divergence.

Newspaper Framing and Mitigation Outcomes

On the basis of the arguments advanced above, we posit the following hypothesis: compared with the 1990 baseline, countries are more likely to reduce emissions when their newspaper frames accept IPCC-type science, orient to the global level of climate politics and ecological risks, and support mitigation policies. Table 1 presents scores for each case on four sets of frames and on four emissions-related outcome measures. Each framing set is constructed out of two opposite values of the frames illustrated in Figures 3a to 3d, defined as the score on the positive pole minus the score on the negative pole: Accepting Science (minus Debating/Oppose Science), Global Impacts (minus Domestic Impacts), Global/UN Politics (minus Domestic Politics), and Mitigation Policy-Pro (minus Mitigation Policy-Debate/Con). So, for example, Brazil gives strong attention (>5 percent) to Accepting Science but also weak attention (>1 percent) to Debate/Oppose Science, so we code Brazil as having weakly positive membership in Accepting Science.

We summarize this fuzzy-set approach in Table 1 in the style of Ragin and Fiss (2008:205). Two plus signs (++) indicate strong set membership, and one plus sign (+) indicates weaker membership; no sign indicates a balance, with both sides having the same value; one minus sign (–) indicates weak negative membership, and two minus signs (– –) indicate strong negative membership. Positive membership in all four sets describes the configuration we hypothesize to be most conducive to emissions reductions: accepting climate science, recognizing global climate impacts, engaging with global and UN politics, and supporting mitigation policies.

The four outcome variables are the assigned reduction target under the Kyoto Protocol (or as modified by the EU bubble), with non–Annex I cases marked as "NA"; the actual percentage change in carbon dioxide emissions from 1990 to an average of 2008–2012 (the first Kyoto commitment period) (Olivier et al. 2015); the difference from the Kyoto/EU target for Annex I countries (a negative percentage means reducing emissions more than the target, a positive percentage means reducing emissions

Table 1. Clusters of Cases, Framing Sets, and Emissions Outcomes.

Cluster	Case	Accepting Science	Global Impacts	Global/UN Politics	Mitigation Policy-Pro	Kyoto/EU Target	% Change 1990 to 2008–2012	Difference from Target	Attainment with Credits
Global ecopolitics	China	+	+		++	NA	278.2%	NA	NA
	Switzerland	++	+	+	+	–8.0%	–2.2%	5.8%	–8.7%
	Germany	+	+			–21.0%[a]	–21.2%	–0.2%	–24.7%
	Japan	+			+	–6.0%	7.2%	13.2%	–8.4%
	Korea	+			+	NA	116.0%	NA	NA
European ecopolitics	Portugal	++		+	+	27.0%[a]	26.4%	–0.6%	12.3%
	Greece	++		+	+	25.0%[a]	17.1%	–7.9%	16.7%
	Sweden				++	4.0%[a]	–15.5%	–19.5%	–15.9%
	Ireland	+	–	–		13.0%[a]	26.4%	13.4%	11.3%
Domestic ecopolitics	Brazil	+			+	NA	92.7%	NA	NA
	India	+	– –		++	NA	180.5%	NA	NA
	Mexico	+	– –	–		NA	56.6%	NA	NA
	Taiwan	+	– –	– –	–	NA	114.5%	NA	NA
Anglo ecopolitics	Canada	–		– –		–6.0%	22.8%	28.8%	NA
	United Kingdom	–	–			–12.5%[a]	–16.3%	–3.8%	–22.5%
	New Zealand	–	+	–	–	0.0%	44.5%	44.5%	–20.3%
	United States	– –		–	–	–7.0%	7.9%	14.9%	NA

Note: EU = European Union; NA = non–Annex I; UN = United Nations; ++ = strongly in the set; + = weakly in the set; – = weakly out of the set; – – = strongly out of the set.
[a]Member of the EU.

less than the target); and the percentage change in carbon dioxide emissions when land use, land-use change, and forestry (LULUCF) activities and Kyoto credits are applied (Greenhouse Gas Inventory Office of Japan 2014) The cases in Table 1 are arranged according to their placements in Figure 2, beginning at the upper left and moving counterclockwise. They are grouped into four clusters on the basis of similarities with neighboring cases.

The Global Ecopolitics cluster (Figure 2, top left) contains the largest number of positive set memberships in total. All its members accept science, and four support mitigation policy. The only case with membership in all four sets is Switzerland. China and Germany share the first two conditions, highlighting the fundamental importance of recognizing and researching climate problems, while Japan and Korea share acceptance of science and support for mitigation policy. In this cluster, only Germany attained its Kyoto target through domestic emissions reductions, all the more unusual because its target demanded so much. However, by counting LULUCF activities and Kyoto credits (for sponsoring green projects in developing countries under the Clean Development Mechanism or Joint Implementation projects), both Switzerland and Japan attained their Kyoto targets. China and Korea were not Annex I countries and so did not have Kyoto targets, and both increased their emissions greatly.

In the European ecopolitics cluster (Figure 2, center left and right), Portugal and Greece share three of the four conditions, giving strong attention to science, global and UN politics, and supporting mitigation policy. Sweden has only one positive condition—strong membership in the pro–mitigation policy set. As explained above, Sweden's weak negative membership in the science set was an exception. Ireland has a weak positive on science, but weak negatives on the two global sets. In this Euro Policy cluster, both Portugal and Greece attained their relaxed Kyoto targets (under the EU bubble) through domestic emissions reductions, while Sweden dramatically reduced its emissions far below its Kyoto/EU target. Ireland increased its emissions far above its relaxed Kyoto/EU target but attained its target when LULUCF activities and Kyoto credits are considered.

The domestic ecopolitics cluster (Figure 2, bottom left and right) is composed of four non–Annex I cases that did not receive Kyoto targets. All four exhibit weak positive membership in the science set. India, Mexico, and Taiwan are strongly negative on global impacts, meaning that they focus very much upon the domestic ecological effects of climate change, while Brazil is an anomaly in this cluster for its balanced attention to global and domestic scales. Taiwan is strongly negative on the global and UN politics set, attributable to its not being a member of the UN. India is a strong positive member of the pro–mitigation policy set, while Brazil is a weak positive member of the same.

Finally, the Anglo ecopolitics cluster (Figure 2, top right), in contrast to the global ecopolitics cluster, contains the largest number of weak negatives, with the exception of one weak positive. Two cases in this cluster are balanced on mitigation policy (Canada, the United Kingdom), while two are negative (New Zealand, the United States). The United States and Canada, both of which subsequently rejected the Kyoto treaty, both had large emissions rises. New Zealand also had a large rise in emissions but attained its Kyoto target through LULUCF activities and Kyoto credits. The United Kingdom reduced its emissions below its Kyoto target and lowered them further through LULUCF activities and Kyoto credits.

Conclusion

This project identified four key contentious dimensions in the global field of climate change discourse over the following frames: validity of climate science, scale of ecological risk, scale of climate politics, and support for mitigation policy. These four dimensions produce four main clusters of cases. The findings presented in Table 1 provide modest confirmation for our hypothesis: compared with the 1990 baseline, countries are more likely to reduce emissions when their newspaper frames accept IPCC-type science, orient to the global level of climate politics and ecological risks, and support mitigation policies. This hypothesis does not indicate an arrow of causality from newspaper frames to policy outcomes but only a modest association between the two. States that are more successful in reducing emissions might issue proclamations of meeting international targets, thus reversing the causality. However, at least in societies that enjoy considerable media freedom, the detailed coding of 131 types of newspaper frames carried out in this article provides a wider indication of the general media culture beyond narrow state purposes.

The results show the complexity of set configurations and the importance of contextual case-level interpretation. However, the overall pattern indicates general support for the hypothesis. All Annex I cases in the global and European ecopolitics clusters met their assigned Kyoto targets, whether through domestic reductions or Kyoto credits, while only some of the Anglo cases met their targets. The domestic ecopolitics cluster, as non–Annex I cases, mostly paid strong attention to the domestic effects of climate change while rapidly increasing emissions. As the data show, they tend to agree that the developed countries should accept a heavier burden for solving the climate change problem (what has been called "equity in responsibility") and insist on their own right to fossil fuel–powered economic growth.

Some specifics of the cases run counter to the general pattern. Strong inclusion in the pro–mitigation policy set corresponds to decreased emissions (Sweden) or rapidly increasing emissions (India and China). Two cases with balanced discourse on climate policy have decreased emissions (Germany, the United Kingdom), while others have increased emissions (Mexico, Ireland, Canada). Cases voicing support for both science and mitigation policy have a range of emissions increases from small (Switzerland, Japan) to medium (Portugal, Greece) to large (Korea, Brazil). Media discourse tipped toward debate and opposition to mitigation policy is related to increased emissions, but these range from small (United States) to medium (New Zealand) to large (Taiwan). Also, some cases met their targets only through the Kyoto credit mechanisms (Switzerland, Japan, Ireland, New Zealand). These variations may be due to additional political, economic, or cultural characteristics that will be explored in future studies.

Overall, the findings provide evidence for both realist national interest theory and world society global norm diffusionist theory, but show more variation than encompassed by those theories. Among the Kyoto protocol Annex I cases, those that were positive or balanced on the global and UN politics set reduced their emissions more than those that had a negative relation to this set. Media framing is a key component of the cultural politics of climate change that may reinforce policy orientations and mitigation performance. When it is more inclusive of an international or cosmopolitan perspective, supports scientific consensus and gives visibility to promitigation frames, media framing can indicate the existence of a positive cultural reinforcement for shifts toward ecological sustainability. Inversely, media framing that is inward looking or gives high visibility to skeptics reinforces cultural barriers to successful climate action.

The analysis indicates a global field where, as predicted by world society theory, cosmopolitan attention to global (UN) climate change politics is associated with factors productive of national climate change mitigation efforts. But it also reveals, as predicted by realist theory, the existence of a more inward focus in some cases that is associated with science denialism or externalizing the blame. This has deep implications for the possibilities of a more cosmopolitan climate politics. In our data, climate cosmopolitanism appears to be more of a European phenomenon, although the Anglo-American bloc really does not fit this model. At the same time, the field that we map really does not seem to align well with the major world systems theory divide between overdeveloped countries and less developed countries. As such, our results provide insight into the dimensions that do structure the international field of climate change policy and public debate. They point out that although some regions of the world are embracing a more cosmopolitan framework for interpreting climate change and its politics, there are other key parts of the world where there appear to be significant social-cultural barriers to a more cosmopolitan approach to the issue. Climate change disasters themselves can lead to other social problems such as civil wars, arguably the case for Syria, that pose great barriers to cosmopolitan orientations. It is questionable whether climate-induced catastrophe will be emancipatory, leading toward increased awareness of interdependency in forging solutions, or will enhance reactionary and self-protective nationalism that will work against such solutions.

Along with media framing analysis, the Compon project is carrying out policy network studies of the climate change political process in diverse societies. The policy network approach provides direct insight into the formation of advocacy coalitions and the role of the state and other political actors in shaping policy outcomes. Further studies under the Compon project will seek to specify the interactions between actual policy processes, media representations, and policy outcomes that cause emissions trajectories. Viewing this article as a demonstration of concept, future detailed content analysis through automated media text mining will enable ongoing study of global media discourse as it responds to changing climate effects. Insight into the varied ways in which different societies interpret the common problem of global climate change can support international negotiations and policy formation by illuminating where either barriers or common ground are more likely to be found.

Appendix

Table A1. Synthesized Frames as Percent of Media Discourse in 17 Cases.

	Brazil	Canada	China	Germany	Greece	India	Ireland	Japan	Korea	Mexico	New Zealand	Portugal	Sweden	Switzerland	Taiwan	UK	US	Total *N*
Adaptation	2.7[a]	0.2	1.3	1.1	0.9	1.5	1.2	1.2	0.0	0.0	0.0	0.0	2.0	0.9	3.6[a]	0.0	1.2	83
Business-Critical Evalution	1.0	0.2	0.0	1.1	0.0	0.2	0.0	0.0	0.0	3.5[a]	2.4[a]	0.0	1.0	0.6	0.5	1.5	3.1[a]	114
Business-Voluntary Mit.	2.9[a]	4.3[a]	1.3	1.1	0.0	0.0	0.4	5.3[a]	1.6	0.0	0.1	0.4	0.0	5.3[a]	1.7	0.0	0.4	110
Civil Soc.-Domestic	3.3[a]	2.5[a]	0.6	3.7[a]	4.1[a]	3.6[a]	9.0[b]	0.4	0.0	11.4[b]	1.9[a]	3.2[a]	5.0[a]	6.1[a]	0.0	4.3[a]	1.8[a]	320
Civil Soc.-Foreign/Global	1.4	3.1[a]	0.9	0.0	2.7[a]	0.8	1.2	0.8	3.3[a]	0.0	0.8	1.6	1.0	5.9[a]	0.0	1.8[a]	1.0	120
Civil Soc.-Popular Culture	3.7[a]	4.5[a]	0.4	0.5	1.4	12.5[b]	0.4	4.5[a]	3.8[a]	0.0	2.8[a]	2.0[a]	2.0	1.7[a]	1.2	8.3[b]	2.6[a]	250
Civil Soc.-Voluntary Mit.	0.8	1.6	0.3	0.0	0.0	0.6	0.0	0.4	1.1	0.0	0.0	4.5[a]	0.0	0.2	1.7	1.0	0.8	49
Ecology-Domestic	5.6[a]	4.9[a]	3.4[a]	2.1[a]	4.1[a]	19.9[b]	14.1[b]	6.6[a]	11.5[b]	30.1[b]	5.7[a]	2.4[a]	7.5[a]	6.3[a]	10.9[b]	8.3[b]	2.7[a]	800
Ecology-Foreign/Global	4.2[a]	3.1[a]	7.1[b]	13.4[b]	4.1[a]	0.4	6.0[a]	5.8[a]	9.3[b]	0.0	7.0[b]	4.5[a]	11.6[a]	6.6[b]	0.0	2.8[a]	2.7[a]	432
Econ.-CC as Opportunity	0.2	2.2[a]	4.7[a]	4.3[a]	1.8	3.4[a]	2.8[a]	0.4	6.0[a]	0.0	0.0	2.0[a]	1.0	2.9[a]	2.8[a]	7.1[b]	0.5	184
Econ.-CC as Threat	1.9[a]	2.5[a]	1.3	3.2[a]	4.5[a]	0.6	1.2	0.4	0.0	0.0	2.2[a]	0.4	4.5[a]	3.5[a]	5.9[a]	2.0[a]	1.8[a]	175
Econ.-CC Impacts	1.2	0.0	0.0	0.0	1.8	0.0	0.0	0.0	4.4[a]	3.7[a]	4.8[a]	5.7[a]	0.0	0.7	5.2[a]	1.3	1.2	183
Econ.-Consumer Behavior	2.5[a]	1.8[a]	0.5	1.6	0.9	1.7	5.2[a]	2.9[a]	3.8[a]	1.2	12.6[b]	0.8	5.5[a]	0.9	0.7	7.6[b]	1.0	362
Econ.-Green Growth	1.7[a]	0.2	0.0	0.5	0.5	0.8	0.4	0.4	1.6	0.0	1.1	0.8	3.0[a]	0.0	3.6[a]	0.5	0.4	68
Econ.-Recession and Mit.	0.4	0.0	0.0	0.5	0.5	0.0	0.0	0.0	2.2[a]	0.0	0.8	1.2	1.0	0.7	0.0	0.8	0.3	36
Energy-Biofuels	7.9[b]	2.5[a]	0.4	1.1	3.2[a]	0.8	2.6[a]	4.5[a]	2.2[a]	5.4[a]	3.3[a]	1.2	2.5[a]	1.3	1.7	0.8	1.6[a]	235
Energy-Debate/Oppose Nuclear	0.6	1.1	0.2	2.1[a]	0.5	0.4	2.0[a]	2.5[a]	0.0	1.1	1.9[a]	0.0	1.5	0.0	0.2	1.5	1.5	96
Energy-Fossil Fuels	1.2	0.7	0.6	1.1	4.5[a]	0.0	0.2	0.4	0.0	0.0	2.0[a]	1.2	0.0	1.1	0.5	0.0	2.1[a]	90
Energy-Pro Alternative	4.1[a]	2.7[a]	5.9[a]	4.8[a]	4.5[a]	10.0[b]	10.4[b]	5.3[a]	3.8[a]	5.5[a]	6.1[b]	4.0[a]	3.0[a]	1.7[a]	13.7[b]	10.6[b]	3.1[a]	534
Energy-Pro Nuclear	1.0	0.9	0.3	0.5	0.0	0.4	0.0	2.1[a]	1.6	0.0	0.0	0.0	1.5	0.4	0.7	0.0	0.1	32
Mit. Policy-Debate/Oppose	1.0	6.5[a]	1.2	4.8[a]	1.4	1.7	3.6[a]	4.1[a]	6.0[a]	4.5[a]	19.6[b]	0.4	1.0	1.5	22.7[b]	5.0[a]	15.5[b]	716
Mit. Policy-Pro	6.0[a]	5.4[a]	7.1[b]	4.3[a]	5.0[a]	13.1[b]	3.2[a]	10.3[b]	7.7[b]	2.9[a]	2.1[a]	2.4[a]	9.0[a]	4.8[a]	4.3[a]	3.5[a]	2.9[a]	433
Mit. Resp.-Global	1.5	2.2[a]	1.3	0.5	5.0[a]	0.6	0.0	0.0	2.7[a]	0.0	0.1	0.0	5.0[a]	0.4	0.0	0.0	0.1	67
Mit. Resp.-Other countries	1.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.5	0.0	1.7[a]	0.0	2.0	0.0	0.5	0.3	0.8	50
Mit. Resp.-Our country	2.5[a]	3.1[a]	2.6[a]	3.7[a]	0.9	3.2[a]	0.0	0.0	5.5[a]	0.0	0.5	0.0	5.0[a]	0.2	0.7	0.0	0.5	117
Mit. Resp.-Rich countries	1.7[a]	0.0	5.7[a]	1.1	0.0	6.6[a]	0.0	0.8	1.1	3.7[a]	0.1	0.0	4.0[a]	0.6	1.4	0.5	1.1	167
Politics-Domestic	8.3[b]	20.9[b]	9.4[b]	8.6[b]	7.2[a]	6.1[a]	9.2[b]	9.5[b]	2.7[a]	9.2[b]	6.1[b]	5.7[a]	5.0[a]	1.8[a]	10.9[b]	6.0[a]	23.7[b]	832
Politics-Foreign Co.	4.8[a]	5.4[a]	9.4[b]	5.9[a]	1.4	0.2	1.4	0.8	2.2[a]	0.0	3.6[a]	6.9[a]	1.5	10.1[b]	0.7	1.3	1.2	335
Politics-Global/UN	7.1[b]	0.9	13.5[b]	7.5[b]	14.0[b]	3.0[a]	4.2[a]	17.3[b]	3.3[a]	2.7[a]	3.6[a]	12.6[b]	4.0[a]	9.2[b]	1.2	5.3[a]	6.2[a]	562
Politics-Multinational	3.7[a]	4.9[a]	15.2[b]	16.6[b]	7.2[a]	1.5	9.6[b]	9.1[b]	3.8[a]	0.0	2.2[a]	23.1[b]	3.5[a]	14.4[b]	0.9	3.5[a]	6.2[a]	584
Science-Accept/Use	10.6[b]	1.8[a]	3.9[a]	2.7[b]	14.9[b]	4.0[a]	8.6[b]	2.9[a]	6.0[a]	9.2[b]	1.0	11.3[b]	0.0	9.2[b]	2.1[a]	3.5[a]	0.5	422
Science-Debate/Oppose	3.3[a]	7.0[b]	0.7	1.1	1.8	1.1	2.4[a]	0.0	0.5	6.0[a]	3.5[a]	0.8	4.5[a]	0.7	0.0	7.8[b]	9.4[b]	303
Technology-High Tech Fix	0.4	2.7[a]	0.6	0.5	1.4	0.6	0.4	1.2	1.6	0.0	0.6	0.8	1.5	0.4	0.0	3.3[a]	1.8[a]	79
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Total *N*	518	445	1,115	187	221	472	498	243	183	818	1,701	247	199	543	422	397	731	8,940

[a]More than 1% of case discourse ($P < .05$).
[b]More than 5% of case discourse ($P < .05$).

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Author Biographies

Jeffrey Broadbent is a professor of sociology at the University of Minnesota. His research includes climate change, environmental sociology, political sociology, and social movements, with a focus on Japan. His book *Environmental Politics in Japan* (Cambridge University Press, 1998) won two academic prizes. He coedited *East Asian Social Movements* (Springer 2011). His articles have appeared in *American Sociological Review*, *Social Problems*, *Policy Sciences*, the *Journal of Civil Society*, *Sociological Forum*, and many book chapters.

John Sonnett is an associate professor of sociology at the University of Mississippi. His research interests include climate change, music, race and racism, and research methods. His work has been published in *Global Environmental Change*, *Poetics*, *Public Understanding of Science*, and *Sociological Forum*, among other outlets.